

# **Mineral reserves report in oil and gas industry**

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IFRS does not provide specific guidance of how to disclose the reserves of oil or gas and related information; however, it is important element of communication between oil companies and stakeholders but Oil and Gas companies tend to apply other requirements of certain national GAAPs or Stock exchange regulations.

Since disclosure of reserves information is very useful, users of financial statements should know there are differences between national GAAPs and stock exchange regulations, for example:

- 1) U.S Companies are required to disclose about proved reserves and proved developed reserves based on FAS 69 requirements, but UK Companies are required are permitted to disclose about either proved and probable reserves or proved developed and undeveloped reserves based on OIAC SORP.
- 2) Reserves can be differently valued by different GAAPs as follow
  - a. UK oil Companies use their own long-term price assumptions which is recommended by OIAC SORP, but U.S Companies are required to use year-end prices per FAS 69.
  - b. Some companies may include royalties payable to the host government or legal owner of field rights in the reserve valuations, but U.S companies should exclude such royalties from the reserves.
  - c. U.S GAAP does not permit to include reserves of associates and other investments that is owned economically by Corporate in consolidated reserves but it is allowed to be disclosed separately.
  - d. Most of Production Sharing Agreements may give rights or economic owner of reserves. However, Under PSA host government retain the legal title of oil resources, but PSA is attractive to foreign oil Company because they can disclose their reserves in the annual report not as fact they owned them but foreign company is entitled to produce for long period of time. In other word, Company can book reserves because of access rather than legal title, that can

be based on Company's proportionate share of reserves of equity method investees and deducting the net of any royalty.

- 3) There are companies disclosed about reserves ratios and reserve cost ratios in the management analysis and discussion, information on company or remuneration report as key indicators of company performance, and other Companies did not specially small oil companies. But reserves ratio and reserve cost ratios has different calculations and users of financial statements should be aware of such differences which will be covered later in this article.
- 4) Under PSA or Farm-in/Farm-out agreement, the estimated net reserves can be determined by two methods which are permitted by SEC. Working Interest Method which takes royalties off from the total estimated proved reserves times working interest and Economic Interest Method which takes company's share of cost oil and profit oil evaluated by the year-end oil price, and the second method is more used and more acceptable by SEC staff specially if the profit entitlement is different from working interests. [*Division of Corporation Finance: Frequently Requested Accounting and Financial Reporting Interpretations and Guidance Prepared by Accounting Staff Members in the Division of Corporation Finance U.S. Securities and Exchange Commission, Washington, D.C. March 31, 2001*]
- 5) FAS 69 requires U.S Oil Companies to use 10% discount rate in estimating the standard measure of discounted future net cash flows relating to proved oil and gas reserves quantities.

IFRS does not have all similar requirements, except for Depreciation calculation which IAS 16 indicates depreciation of all assets is computed over estimated useful lives of the asset or part of useful lives of all assets in total, that can be considered that it covers the depletion method. Therefore, the differences are appeared due to the different national GAAPs and Stock Exchange regulations.

### **What oil and gas reserves reporting can effect and reflect**

Reserves measures are accounting estimates that can effect the following:

- a) DD&A charge which is calculated based on unit-of-production method and the remaining volume of reserves. Changes in recoverable reserves by revisions, extensions and new discoveries of the block can increase or decrease the economic life of the block but not more than specific legal period (e.g. 25 years which most of PSAs stated that the developed area can be invested by Contractor but not more than 25 years) that effect periodic charges of DD&A due to the increase or decrease the volume of recoverable reserves.
- b) Reserves estimate is important to determine the economic life of blocks which impact on the estimated decommissioning and environmental cost which the long period of

economic life may lead to increase of pollution and increase the rehabilitation of blocks at the same time can decrease the yearly provision

- c) Revenue of the company depends on the recoverable reserves, whereas the smaller recoverable reserves, the less revenue and net cash flow in can be generated in the long-term, and the smaller ultimate recoverable reserves, the higher operating costs will be.
- d) Impairment calculation of blocks is depend on the estimated reserves and expected net cash flows, the more recoverable reserves the less probability of impairment.
- e) Reserves can effect the market stock price of a company, it can manipulate the stock too.

We discussed above about how the oil and gas reserves can effect the financial statements, but now we need to know how reserves reflect company's performance.

**Reserve Replacement Ratio (RRR)** is considered as key company performance which low rate may reflects that company is not replacing the reserves it produces and will deplete its proved reserves and be forced to either purchase reserves in place or cease to do business. There are different formula of calculating the RRR, first calculation consider extension, discoveries, improved recovery, purchases of reserves, sales of reserves in place and revision of previous estimate in the calculation because they consider the purchasing reserves as alternative for interest of company, second calculation, does not consider the purchasing reserves or selling reserves in place, and other calculation include only extension, discoveries and improved recovery to reflect the management's role in reserve replacement because the revisions is out of management's control. [*Charlotte J. Wright and Rebecaa A. Gallun, 5<sup>th</sup> Edition, 2008, Fundamentals of OIL & GAS Accounting, PennWell Corporation, Tulsa, Oklahoma, USA. Page 704*]

**Reserve Life Ratio (RLR)**, this ratio is calculate the expected number of years that production could continue at the current rate if no new reserves are added. It is preferred to compute the ratio for oil separately from gas but some companies compute them together. The high rate, the longer company can continue to generate enough cash flow to cover all the obligations. [*Charlotte J. Wright and Rebecaa A. Gallun, 5<sup>th</sup> Edition, 2008, Fundamentals of OIL & GAS Accounting, PennWell Corporation, Tulsa, Oklahoma, USA. Page 707*]

**Net Wells to Gross Wells Ratio (NWGW)**, U.S oil companies disclose their total gross and net wells in their 10Ks filed with the SEC. Gross wells are the wells drilled by Corporate or even joint venture, net well is the gross well drilled multiplied by the working interests. This ratio measure the future profitability, the higher ratio reflects the larger interest in each well that company is probably to be the operator and be more profitable in the consolidated financial statements. [*Charlotte J. Wright and Rebecaa A. Gallun, 5<sup>th</sup> Edition, 2008, Fundamentals of OIL & GAS Accounting, PennWell Corporation, Tulsa, Oklahoma, USA. Page 708*]

**Average Reserves Per Well Ratio (ARPW)**, this ratio measures the future profitability of company too, the high ratio gives an indication that proved reserves can be produced with few wells which can be produced more efficiently and profitably and greater company's future profit can be generated. Also the **higher average daily production per well ratio** the more efficiently and profitably the reserves can be produced. [Charlotte J. Wright and Rebecaa A. Gallun, 5<sup>th</sup> Edition, 2008, *Fundamentals of OIL & GAS Accounting*, PennWell Corporation, Tulsa, Oklahoma, USA. Page 709-710]

**Finding Cost Ratio (FCR)**, this ratio is famous ratio utilized in evaluating the efficiency of a company in adding new reserves, users of financial statements should know there is no consensus regarding which costs should be considered as finding costs and companies use different accounting method but this has not become a major difference because most of oil companies apply successful method, and there is timing difference between the period of finding cost are spent and the new reserves are reported in the financial statements. Anyway, Finding cost include the exploration costs which represent G&G costs and exploratory costs, and there is other calculations which may include cost of purchasing proved lease, cost of unproved lease and other calculations consider the development drilling costs too to compute **Finding and Development cost ratio or reserve replacement cost ratio** If we want to measure the performance of technical performance of companies or managements the finding cost ratio which include only exploration costs the reserves extensions and discoveries can reflect how efficient they are, the high ratio, the more efficient they are. To know how the overall efficiency or experience of company's management, we can consider all the costs and all reserves additions into your considerations. [Charlotte J. Wright and Rebecaa A. Gallun, 5<sup>th</sup> Edition, 2008, *Fundamentals of OIL & GAS Accounting*, PennWell Corporation, Tulsa, Oklahoma, USA. Page-711-713]

**Operating or Lifting Costs per BOE (LCPB)**, this ratio is famous performance indicator too which evaluate how the Company is controlling its operating costs. The high ratio can reflect poor cost control or management that is applied by Company. Also, this ratio should not used without considering the revenues and net income. The Company that has higher operating costs per boe may have higher revenue and net income per boe, but if the Company has higher operating cost per boe and lower revenue and net income per boe in comparison to peer companies, it can be a problem and gives a bad indication of poor control management of company. [Charlotte J. Wright and Rebecaa A. Gallun, 5<sup>th</sup> Edition, 2008, *Fundamentals of OIL & GAS Accounting*, PennWell Corporation, Tulsa, Oklahoma, USA. Page 716-717]

**Value of Proved Reserve Additions per BOE (VPRAB)**, this ratio is computed by using certain elements of changes in standard measure of discounted future net cash flows disclosure and reserve quantity disclosure, and this ratio has different calculation formula that same as finding cost by dividing the value by the quantity. This ratio gives an indication of the quality of reserves, the higher ratio the more quality of reserves reflects. [Charlotte J. Wright and Rebecaa A. Gallun, 5<sup>th</sup> Edition, 2008, *Fundamentals of OIL & GAS Accounting*, PennWell Corporation, Tulsa, Oklahoma, USA. Page 719]

Those ratios are supposed to be compared with last period and to the median rates of industry and rates of peers to help management to evaluate and measure the performance of exploration management of companies and providing alternative solutions of how to improve the efficiency of company by each cost center, or regional or country or block, and how to control or manage costs. Also, these ratios enable investor or analyst to have overall picture of the efficiency of Company's management.

We would like to give actual and practical examples by applying those ratios and tracking how the reserves effects financial statements of real oil companies for 10 or 20 years to understand how reserve can effect and what reflects in financial statements of several oil and gas companies but we will provide free form of those ratios in spreadsheets to enable our readers to do it by themselves.

As we know that any accounting estimate can be considered as high inherent risk because it will be susceptible for misrepresented or misstated in the financial statements and with Stock Exchange Market which mislead analyst and stocks or bonds investors to maintain or buy Company's stocks/bonds. Also, it may mislead Joint Venture investors to keep investing on nonpotential area. Reserves owned by Venture partners are supposed to be recognized as proven reserves in the same reporting period by all venture partners, but this can not be happened, a venture partner may recognized part of reserves as proved reserves however, other partners has not made final decision to do so, this can give an indication that a company may overstate its proved reserves that can lead to false financial statements or may refer to different technical standards and experience but with considering the reasonable limits of estimating the reserves. For example not exaggerate the proved reserves by 40% more than it should be and referring this overstated proven reserves to judgment or different technical standards and experience.

The financial auditor's role in misrepresenting the reserves is stand on the ISA 620 which recommend the auditors to use work performed by expert, and the more independent expert is the more reliable on the expert's report on evaluation of consolidated reserves to enable them to ensure the DD&A is properly calculated.